PROGRAM-RELATED FATALITIES

MICHIGAN 1999

MIOSHA Information Division
Michigan Department of
Consumer & Industry Services
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INTRODUCTION

The latest National Census of Fatal Occupational Injuries data shows that 6,026 fatal work injuries occurred in 1998. In Michigan there were 87 program-related fatalities reported in 1999 or about 1.4% of the national total. Program-related fatalities in Michigan are recorded and tabulated by the MIOSHA Information Division, Bureau of Safety and Regulation, Michigan Department of Consumer and Industry Services. The sources of data include the Basic Report of Injury - Form 100 and telephone reports of fatalities to the Bureau of Safety and Regulation. The conditions necessary for a fatal case to be program-related are given in the NOTE ON PROGRAM RELATED CASES (see page 8).

Program-related fatalities have been recorded since 1975 in Michigan. A high of 115 program-related fatalities occurred in 1977. There was a gradual decrease until 1983 when 52 program-related fatalities were recorded. Program-related fatalities increased from 52 in 1983 to 74 for 1986. A two-year decline to 64 cases in 1988 was recorded before an increase to 76 program-related fatalities in 1989. Between 1989 and 1993 the number of fatalities recorded dropped to 51, showing a reduction of about 54 percent from the number of cases in 1978. There were 61 program-related fatalities recorded during 1994, this decreased to 48 program-related fatalities in 1995 and decreased again to 46 program-related fatalities in 1996. This is 58.6 percent lower than the 111 recorded in 1978 and the lowest number of program-related fatalities recorded in over 20 years. The 76 program-related fatalities recorded in 1997 is 31.6% lower than the 1978 figure of 111. The number of fatalities decreased from 76 in 1997 to 68 in 1998 before increasing to 87 in 1999.

The intention of this report is to contribute to a further understanding of program-related fatality profiles and hence, to the continued effort of preventing and reducing fatal cases. Information presented in this report may be of interest to employers and employees, in general, and safety professionals and consultants, in particular. Any inquiries regarding this report may be addressed to:

MIOSHA Information Division
Michigan Dept. of Consumer & Industry Services
7150 Harris Drive, Box 30643
Lansing, Michigan 48909-8143
Telephone (517) 322-1851

PROGRAM-RELATED FATALITIES MICHIGAN 1999

This program-related fatality information for Michigan was compiled from the "Employers Basic Report of Injury", Workers Disability Form 100s and from direct telephone reports of fatalities to the Bureau of Safety and Regulation. Only fatal cases that are program-related, as defined by the Bureau of Safety and Regulation, Michigan Department of Consumer and Industry Services are compiled. Therefore the data does not include fatalities resulting from heart attacks, homicides, suicides, highway personal motor vehicle trips and aircraft accidents. The figures are shown in Tables 1 through 12.

The number of program-related fatalities declined from 115 in 1977 to 52 in 1983 gradually increased to 74 in 1986 before declining over the next two years to 64 in 1988. Program-related fatalities in Michigan during the calendar year 1989 increased to 76 before again declining over the next two years to 60 in 1991. Michigan recorded 61 program-related fatalities in 1992, then declined to 51 in 1993 before increasing to 61 in 1994. Program-related fatalities decreased over the next 2 years to an all time low of 46 program-related fatalities in 1996 before increasing to 76 in 1997. Sixty-eight program-related fatalities were recorded in 1998, a ten percent decline from 1997. There were 87 program-related fatalities recorded in 1999. A definition of program-related cases can be found on page 8 of this report. Program-related fatality trends are shown in Table 1.

This report is an overview of how the fatalities were distributed across industry groups; occupations; sources of injury or illness; events or exposures; parts of body affected; and nature of injury or illness. Frequencies of fatalities by age group, gender, month of occurrence and counties of occurrence are also provided.

Table 2 shows the trend in the distribution of program-related fatalities by industry groups from 1992 to 1999. Beginning in 1999, the industry group category is based on the standard industrial classification (S.I.C.) of the type of job being performed by the employee at the time of the accident. Prior to 1999, the industry group category was based on the standard industrial classification (S.I.C.) of the employer regardless of the type of job being performed by the employee at the time of the accident. This change was found to have minimal impact on the industry group categories.

The largest number of fatalities occur in the Manufacturing and Construction industries. The Agriculture, Forestry and Fishing; Retail Trade; and Public Administration industry divisions experienced a decrease from the previous year. Construction, Manufacturing, Transportation and Public Utilities, Wholesale Trade and Services, showed increases in the number of fatalities from the previous year. The industries of Oil and Gas Extraction and Finance, Insurance and Real Estate recorded the same number of fatalities as the previous year. The largest decrease was recorded in Agriculture, Forestry and Fishing recording 2 fewer fatalities in 1999 than in 1998.

Program-related fatalities by occupation are shown in Table 3. The most affected occupation group in 1999 with 23 fatalities was Handlers, Equipment Cleaners, Helpers and Laborers followed by Construction Trades with 14 fatalities. Transportation and Material Moving occupations recorded 9 fatalities, while 6 fatalities occurred in the Precision Production occupation group in 1999.

The sources of injury or illness leading to program-related fatalities during 1998 - 1999 are listed in Table 4. Floors, Walkways, Ground Surfaces; (14) Construction, Logging Machinery; (8) Highway Vehicle Motorized; (8) Material Handling Machinery; (7) and Machine, Tool and Electric Parts; (7) combined, accounted for 44 cases or about 50 percent of the sources of fatal injury or illness. The category of Plant and Industrial Powered Vehicles, Tractors recorded 5 fatalities in 1999.

The number of victims that Fell to a Lower Level during 1999 was thirteen. Twelve of the fatalities were the result of Fires. Victims being Caught In or Compressed by Equipment resulted in fifteen fatalities, and Contact with Electric Current accounted for nine fatalities. Table 5 shows program-related fatalities by event or exposure.

Parts of the body affected by fatal injury or illness show that Head, Body Systems, and Multiple Parts, together, accounted for 75 percent of the fatalities. Twenty-four fatal injuries or illnesses were specified for both Body Systems and Multiple Parts as the part of body affected. Eighteen cases recorded the Head as the part of body affected by fatal injuries and illnesses during 1998 - 1999 are shown in Table 6.

The nature of the fatal injuries or illnesses reported were Electric Shock, Electrocution (10); Internal Injuries of the Trunk (18); Asphyxiation, Strangulation, Drowning, Suffocation (5); and Burn, Heat (6). A significant number, approximately 20 percent, of the fatalities that occurred in 1999, were the result of intracranial injuries to workers. Details of the nature of injuries and illnesses causing program-related fatalities are given in Table 7.

Employees between the ages of 21 and 40 suffered about 54 percent of the fatal injuries and illnesses. There were 5 fatalities to workers under the age of 21. The age groups of 26-30 and 31-35 both suffered 11 fatalities, which was the second highest number for any of the five-year age categories following the age group of 21 - 25 with 15 fatalities. The age groups of 56-60 suffered 7 fatalities. Of the 87 victims, 81 were male employees. The distribution of program-related fatalities by age and gender are shown in Tables 8 and 9.

In 1999, March was the month with the highest number of fatalities (14). Eleven program-related fatalities were reported during February. The months of October and July both recorded 9 fatalities while the months of May, June and August each recorded 8 fatalities. November recorded six and December recorded five fatalities. January recorded the lowest number of fatalities with two. Details are shown in Table 10.

Program-related fatalities by industry group and day of the week are shown in Table 11. The highest number of fatalities by day of the week shows Monday with 23, followed by Thursday showing seventeen. Wednesday and Friday both recorded fourteen cases while Tuesday recorded twelve. There were two fatalities recorded on Sunday in 1999.

The distribution of fatality cases by counties shows that 32 counties reported program-related fatalities in 1999. Wayne County reported the largest (19) and Oakland County showed the second largest number of cases with twelve. Hillsdale and Kent counties both reported 5 fatalities while St. Clair and Genesee both reported four. A complete distribution of fatality cases by county of occurrence is shown in Table 12.

Even though Michigan's 1999 total program-related fatality cases are far less than the thousands of cases reported nationwide, the consequences of these on-the-job deaths in terms of human suffering, lost workdays, decreased production, and increased compensation rates are all too significant to be overlooked.

In order for Michigan to reduce the number of on-the-job fatality cases, it requires a conscious effort on the part of employers to recognize and comply with MIOSHA standards, develop and implement safe working procedures and assure that employees observe and practice these procedures. The MIOSHA program offers on-site consultation and safety education and training opportunities to employers and employees alike to help them achieve this goal.

The program-related fatality data for Michigan are presented in the following series of Tables 1 through 12. A brief description of how the program-related fatalities occurred is also provided following the series of tables. The descriptions are listed by industry groups based on the standard industrial classification of the type of job being performed by the employee at the time of the accident and are valuable insights as to how the accidents occurred. The information can be very useful to safety professionals, in particular, for use in prevention planning.

NOTE ON PROGRAM-RELATED CASES

A fatality is recorded as program-related if it appears to be related to one or more of the following conditions:

1. The incident was found to have resulted from violations of MIOSHA safety and health standards or the general duty clause;

2. The incident was considered to be the result of a failure to follow a good safety and health practice that would be the subject of a safety and health recommendation.

3. The information describing the incident is insufficient to make a clear distinction between a "program-related" and "non-program-related" incident, but the type and nature of the injury indicates that there is a high probability that the injury was the result of a failure to adhere to one or more MIOSHA standards, the general duty clause, or good safety and health practice.

Any further inquiries may be addressed to:

MICHIGAN DEPARTMENT OF CONSUMER & INDUSTRY SERVICES
MIOSHA INFORMATION DIVISION
7150 HARRIS DRIVE, BOX 30643
LANSING, MICHIGAN 48909-8143
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TABLE 1

PROGRAM-RELATED FATALITY TRENDS
MICHIGAN 1978 - 1999

YEAR	CASES	PERCENT CHANGE	CUMULATIVE PERCENT CHANGE
1978	111	------	------
1979	89	-19.8	- 19.8
1980	73	-18.0	- 34.2
1981	65	-11.0	- 41.4
1982	67	+ 3.1	- 39.6
1983	52	-22.4	- 53.2
1984	59	+13.5	- 46.8
1985	67	+13.6	- 39.6
1986	74	+10.4	- 33.3
1987	73	- 1.4	- 34.2
1988	64	-12.3	- 42.3
1989	76	+18.8	- 31.5
1990	72	- 5.3	- 35.1
1991	60	-16.7	- 45.9
1992	61	+1.7	- 45.0
1993	51	-16.4	- 54.1
1994	61	+19.6	- 45.0
1995	48	- 21.3	- 56.8
1996	46	- 4.2	-58.6
1997	76	+65.2	-31.6
1998	68	-10.5	-38.7
1999	87	+27.9	-21.6

SOURCE: MIOSHA Information Division, Michigan Department of Consumer & Industry Services

TABLE 2

PROGRAM-RELATED FATALITIES
BY INDUSTRY GROUPS
MICHIGAN 1992 - 1999

	YEARS							
INDUSTRY GROUP	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
AGRICULTURE, FORESTRY AND FISHING	4	3	2	5	1	2	4	2
OIL AND GAS EXTRACTION	2	0	0	1	0	0	0	0
CONSTRUCTION	17	20	28	15	18	32	25	33
MANUFACTURING	16	19	13	16	12	22	22	25
TRANSPORTATION AND PUBLIC UTILITIES	7	8	5	4	5	5	5	10
WHOLESALE TRADE	3	1	3	2	2	1	3	5
RETAIL TRADE	3	0	3	1	1	3	4	3
FINANCE, INSURANCE AND REAL ESTATE	0	0	0	0	0	1	0	0
SERVICES	7	0	6	2	2	8	3	8
PUBLIC ADMINISTRATION	2	0	1	2	5	2	2	1
TOTAL	**61**	**51**	**61**	**48**	**46**	**76**	**68**	**87**

Note: Beginning in 1999, the industry group category is based on the standard industrial classification (S.I.C.) of the type of job being performed by the employee at the time of the accident.

Source: MIOSHA Information Division, Michigan Department of Consumer & Industry Services.

TABLE 3

PROGRAM-RELATED FATALITIES
BY OCCUPATION
MICHIGAN 1998 - 1999

OCCUPATION	NUMBER OF CASES 1999	1998
Executive, Administrative and Managerial	5	3
Professional Specialty Occupations	0	1
Technicians and Related Support	1	1
Sales	0	1
Administrative Support, Including Clerical	0	1
Service, Except Protective and Household	6	1
Farming, Forestry and Fishing	2	6
Mechanics and Repairers	9	3
Construction Trades	14	16
Precision Production	6	1
Machine Operators and Tenders, Except Precision	6	10
Fabricators, Assemblers and Handworking	5	3
Production Inspectors, Testers, Samplers and Weighers	1	1
Transportation and Material Moving	9	6
Handlers, Equipment Cleaners, Helpers and Laborers	23	14
TOTAL	**87**	**68**

Source: MIOSHA Information Division, Michigan Dept. of Consumer & Industry Services.

TABLE 4

PROGRAM-RELATED FATALITIES BY SOURCE OF INJURY OR ILLNESS MICHIGAN 1998 - 1999

SOURCE OF INJURY OR ILLNESS	NUMBER OF CASES 1998	1999
Agricultural and Garden Machinery	1	--
Agricultural Chemicals	1	--
Atmospheric & Environmental Conditions	12	11
Building Materials, Solid Elements	1	3
Carbon Dioxide/Monoxide	1	3
Cases, Cabinets, Racks, Shelves	--	1
Coal, Natural Gas, Petroleum Fuels & Products	1	2
Construction, Logging Machinery	3	4
Containers	--	2
Dirt, Earth, Sand, Gravel	1	5
Floors, Walkways, Ground Surfaces	8	10
Food Products, Fresh or Processed	--	1
Handtools - Powered	--	1
Handtools - Nonpowered	--	2
Heating, Cooling & Cleaning Machinery	--	1
Highway Vehicle Motorized	7	7
Horses	--	1
Hydrogen Sulfide	--	1
Ladders	2	--
Lighting Equipment	2	1
Liquid Nitrogen	1	--
Machine, Tool & Electric Parts	5	4
Manlifts	2	--
Material Handling Machinery	--	2
Metal Materials, Nonstructural	1	2
Metal, Wood, & Special Material Machinery	4	8
Other Structural Elements	1	--
Plant & Industrial Powered Vehicles, Tractors	4	6
Rail Vehicle	--	3
Slings	--	1
Special Process Machinery	1	--
Steam, Vapors, Liquids	1	--
Structures, Buildings, Guard Rails	--	3
Tires, Inner Tubes, Wheels	--	1
Trees, Logs	3	1
Vehicle, Offroad	1	--
Walls	4	--
TOTAL	**68**	**87**

Source: MIOSHA Information Div., Michigan Dept. of Consumer & Industry Services.

TABLE 5

PROGRAM-RELATED FATALITIES
BY EVENT OR EXPOSURE
MICHIGAN 1998 - 1999

EVENT OR EXPOSURE	NUMBER OF CASES 1998	1999
CAUGHT IN, OR COMPRESSED BY EQUIPMENT	11	15
CAUGHT IN/CRUSHED IN COLLAPSING MATERIAL	6	4
CONTACT WITH ELECTRIC CURRENT	11	9
CONTACT WITH TEMPERATURE EXTREMES	--	1
EXPLOSION	1	5
EXPOSURE TO CAUSTIC, NOXIOUS, OR ALLERGENIC SUBSTANCES	3	5
FALL TO LOWER LEVEL	8	13
FALL UNSPECIFIED	--	2
FIRE	11	12
NON-HIGHWAY MOTOR VEHICLE ACCIDENTS	3	6
HIGHWAY MOTOR VEHICLE ACCIDENTS	--	2
PEDESTRIAN, NONPASSENGER STRUCK BY VEHICLE, MOBILE EQUIPMENT	7	3
STRUCK BY OBJECT	7	10
TOTAL	**68**	**87**

Source: MIOSHA Information Div., Michigan Dept. of Consumer & Industry Services.

TABLE 6

PROGRAM-RELATED FATALITIES
BY PARTS OF BODY AFFECTED
MICHIGAN 1998 - 1999

PARTS OF BODY AFFECTED	NUMBER OF CASES	
	1998	**1999**
ABDOMEN	3	1
HEAD	16	18
NECK	2	2
CHEST	2	9
TRUNK, UNSPECIFIED	1	--
TRUNK, MULTIPLE	5	9
MULTIPLE PARTS	23	24
BODY SYSTEMS	16	24
TOTAL	**68**	**87**

Source: MIOSHA Information Division, Michigan Dept. of Consumer & Industry Services.

TABLE 7

PROGRAM-RELATED FATALITIES
BY NATURE OF INJURY OR ILLNESS
MICHIGAN 1998 - 1999

NATURE OF INJURY OR ILLNESS	NUMBER OF CASES	
	1998	**1999**
ASPHYXIATION, STRANGULATION DROWNING, SUFFOCATION	2	5
BURN, HEAT	5	6
ELECTRIC SHOCK, ELECTROCUTION	11	10
INTERNAL INJURIES OF THE TRUNK	11	18
INTRACRANIAL INJURIES	16	18
MULTIPLE INJURIES	20	20
OTHER POISONING & TOXIC EFFECTS	3	9
OTHER	--	1
TOTAL	**68**	**87**

Source: MIOSHA Information Division, Michigan Department of Consumer & Industry Services.

TABLE 8

PROGRAM-RELATED FATALITIES BY AGE
MICHIGAN 1998 - 1999

AGE	NUMBER OF CASES 1998	1999
20 and Under	7	5
21 - 25	5	15
26 - 30	12	11
31 - 35	10	11
36 - 40	10	10
41 - 45	7	7
46 - 50	6	6
51 - 55	5	9
56 - 60	3	7
61 and Over	3	6
TOTAL	**68**	**87**

TABLE 9

PROGRAM-RELATED FATALITIES BY GENDER
MICHIGAN 1998 - 1999

GENDER	NUMBER OF CASES 1998	1999
MALE	61	81
FEMALE	7	6
TOTAL	**68**	**87**

Source: MIOSHA Information Division, Michigan Dept. of Consumer & Industry Services.

TABLE 10

PROGRAM-RELATED FATALITIES
BY MONTH OF OCCURRENCE
MICHIGAN 1998 - 1999

MONTH OF OCCURRENCE	NUMBER OF CASES 1998	1999
JANUARY	8	2
FEBRUARY	3	11
MARCH	3	14
APRIL	2	4
MAY	4	8
JUNE	8	8
JULY	4	9
AUGUST	9	8
SEPTEMBER	7	3
OCTOBER	3	9
NOVEMBER	4	6
DECEMBER	13	5
TOTAL	**68**	**87**

Source: MIOSHA Information Div., Michigan Dept. of Consumer & Industry Services.

TABLE 11

PROGRAM-RELATED FATALITIES
BY INDUSTRY GROUPS AND DAY OF THE WEEK
MICHIGAN 1999

INDUSTRY GROUP	DAY OF THE WEEK							
	SUN	MON	TUE	WED	THUR	FRI	SAT	TOTAL
AGRICULTURE, FORESTRY AND FISHING	-	1	-	-	-	1	-	**2**
OIL AND GAS EXTRACTION	-	-	-	-	-	-	-	**0**
CONSTRUCTION	1	7	4	7	7	7	-	**33**
MANUFACTURING	-	14	3	2	3	1	2	**25**
TRANSPORTATION AND PUBLIC UTILITIES	1	1	1	1	3	3	-	**10**
WHOLESALE TRADE	-	-	2	-	-	1	2	**5**
RETAIL TRADE	-	-	-	-	2	1	-	**3**
FINANCE, INSURANCE & REAL ESTATE	-	-	-	-	-	-	-	**0**
SERVICES	-	-	1	4	2	-	1	**8**
PUBLIC ADMINISTRATION	-	-	1	-	-	-	-	**1**
TOTAL	**2**	**23**	**12**	**14**	**17**	**14**	**5**	**87**

Source: MIOSHA Information Division, Michigan Dept. of Consumer & Industry Services.

TABLE 12

PROGRAM-RELATED FATALITIES BY
COUNTY OF OCCURRENCE, MICHIGAN, 1999

COUNTY	NUMBER OF CASES
ALLEGAN	1
BARRY	1
CALHOUN	1
CHARLEVOIX	1
GENESEE	4
GRAND TRAVERSE	2
HILLSDALE	5
HURON	1
INGHAM	3
JACKSON	1
KENT	5
LAPEER	1
MACKINAC	1
MACOMB	3
MANISTEE	1
MARQUETTE	1
MIDLAND	2
MONROE	1
MUSKEGON	3
OAKLAND	12
ONTONAGON	1
OSCODA	1
OTSEGO	1
OTTAWA	3
ROSCOMMON	1
SAGINAW	1
SANILAC	2
SHIAWASSEE	1
ST. CLAIR	4
ST. JOSEPH	1
WASHTENAW	2
WAYNE	19
TOTALS	**87**

Source: MIOSHA Information Division, Michigan
Dept. of Consumer & Industry Services

PROGRAM-RELATED FATALITY INCIDENTS
BRIEF DESCRIPTIONS OF CASES BY INDUSTRY GROUPS

Agriculture, Forestry and Fishing:

1. Employee was on the flat bed of a truck, standing up trees that were to be unloaded. He was found lying on the ground with a tree from the flat bed lying beside him. The employee was pronounced dead at the hospital from chest injuries.

Violations Noted: None

2. Employee was using a wood chipper and attempted to push brush in with his foot and was pulled into the chipper up to his abdomen.

Violations Noted: None

Construction:

1. Employee was setting up equipment related to welding a crack in a gas scrubber. While waiting for instructions on top of the gas scrubber the employee was overcome by carbon monoxide.

Violations Noted: Air Contaminants and Physical Agents - Construction
Respiratory Protection
Hazardous Waste Operations and Emergency Response
Hazard Communication
General Workplace Requirements - Construction

2. Employee was operating a generator indoors and was overcome by carbon monoxide fumes.

Violations Noted: Air Contaminants
Hazard Communication

3. Employee was in an aerial work platform and was elevated 20 feet above the floor positioned between a bus bar and a continuous moving conveyor. The employee was in the lift moving overhead lines. A dog on the conveyor caught on the guardrail of the lift pulling the lift over and throwing the worker to the floor.

Violations Noted: Aerial Work Platforms
General Rules

4. Employee was assembling ductwork to install an air conditioner on the roof of the break area. The employee stepped off the edge of the roof and fell, landing on a 30-inch high guardrail below.

Violations Noted: Fall Protection
General Rules

Construction (continued)

5. Employee was clearing a site for a golf course, fell out of the bulldozer cab and was run over by the moving bulldozer.

Violations Noted: Mobile Equipment
General Rules

6. Employee was installing underground plumbing conduit and the trench caved in.

Violations Noted: Excavation, Trenching and Shoring
Personal Protective Equipment
General Rules

7. Employee was installing a water line in a trench and the trench caved in burying the employee.

Violations Noted: Excavation, Trenching and Shoring
Personal Protective Equipment
General Rules
Statutory Rules - Failure to Report Fatality

8. Employee was building a new house when a storm with 70 to 115 miles per hour winds caused the house to collapse on the employee.

Violations Noted: None

9. Employee was in a 16-foot deep trench making a connection between a 10-inch plastic pipe into a manhole opening. The side of the trench caved in pinning the employee against the side of the manhole.

Violations Noted: Excavation, Trenching and Shoring
General Rules
Personal Protective Equipment
Handling and Storage of Materials
Lifting and Digging Equipment
Fall Protection
Mobile Equipment

10. Employee was electrocuted when a boom truck unloading pipe made contact with overhead electrical powerlines.

Violations Noted: Personal Protective Equipment
Lifting and Digging Equipment

Construction (continued)

11. Employee was installing conduit from panel to electrical boxes to be located in the ceiling. While using a scissor lift to get to the ceiling the employee caught himself between a waterline and the scissor lift.

Violations Noted: Aerial Work Platforms

12. Employee was working on a roof installing siding and stood on a roof opening that was covered with a single piece of twoinch thick styrofoam hard back insulation. The insulation collapsed from under the employee causing him to fall 28 feet to the pavement below.

Violations Noted: Scaffolds
General Rules
Guarding of Walking and Working Areas
Fall Protection

13. Employee was attempting to loosen a boring rod from a cable-boring machine with a pipe wrench. The rod rotated causing the pipe wrench, which was attached to the rod to spin around and strike the employee in the head.

Violations Noted: Personal Protective Equipment
Tools
General Rules
Recording and Reporting of Occupational Injuries and Illnesses

14. Employee was finalizing the electrical connections to a saw, which included a 600-volt step up transformer. After installation was complete the employee pushed the start button and received a fatal shock.

Violations Noted: Electrical Installations

15. Employee was attaching a new bond jumper to a new strand of communication cable and was electrocuted when he made contact with an energized ground on an existing pole.

Violations Noted: Telecommunications
Aerial Work Platforms

16. Employee was shoveling asphalt material from the raised bed of a dump truck when the bed of the truck touched an overhead power line electrocuting the employee.

Violations Noted: General Rules

Construction (continued)

17. Employee was a line worker and climbed a tower to a height of 475 feet to remove winch cable and equipment. The employee attached the winch cable to his harness and when the winch truck was started the winch cable pulled the employee off the tower.

Violations Noted: Fall Protection

18. Employee was a carpenter at a residential building site. He fell nine feet from a scaffold he was erecting into a basement.

Violations Noted: Scaffolds
Fall protection
General Rules

19. Employee was performing storm damage power line repair and came in contact with a downed energized line.

Violations Noted: Power Transmission and Distribution

20. Employee was installing road signs on the shoulder of the road when a driver went off the road, striking the employee.

Violations Noted: None

21. Employee drove his truck into a landfill and after dumping the load got stuck in the mud. Another person came to his aid with a bulldozer. The employee got between his truck and the running bulldozer and was crushed when the bulldozer moved towards him.

Violations Noted: General Rules

22. Employee was removing a 480-volt switch from bus-way and made contact with the 480-volt bus with a screwdriver, which caused a flash fire.

Violations Noted: Electrical Installations
General Rules

23. Employee set up a 28-foot ladder to install cable TV. The employee climbed the ladder to about 20 feet when he fell backwards to the ground.

Violations Noted: General Rules

Construction (continued)

24. Employee was in a basket attached to the forks of a rough terrain forklift. The employee was run over by the forklift when the operator lost control, throwing the employee out of the basket.

Violations Noted: Mobile Equipment
Scaffolds
General Rules

25. Employee was riding on the back of a paver, moving in reverse. The employee lost her footing and fell under the paver and was run over,

Violations Noted: General Rules

26. Employee was installing windowsills on a job site. The employee walked over to another employee who was using a masonry saw then walked away in a southwest direction. A truck was backing up and ran over the employee.

Violations Noted: General Rules

27. Employee was working on airport runway lighting looking for a short in the system. The runway lighting power is divided into north and south. The employee de-energized the south end of the runway and continued looking for the short. Without realizing it the employee crossed over into the north and energized part of the runway when the tower turned on the lights electrocuting the employee.

Violations Noted: Electrical Installations
General Rules

28. Employee was found lying in a garage area of a new house under construction. It appears that the employee was on a step ladder installing ductwork and the ladder tipped or the employee fell from the ladder striking his head on the concrete block foundation wall.

Violations Noted: Fixed and Portable Ladders
General Rules
Statutory Rules - Failure to Report Fatality

29. Employee was in a steel material basket which was slipped onto the forks of a fork lift truck. The employee was then elevated approximately 8 feet above the ground. While attempting to drill a hole the basket slipped off the forks and the employee fell to the ground.

Violations Noted: Scaffolds
General Rules

Construction (continued)

30. Employee was standing on a starter panel to spread insulation. A roll of insulation had to be rotated and the employee fell when the starter panel collapsed under him.

Violations Noted: General Duty
General Rules

31. Employee was installing an eight-inch diameter sewer pipe in a 12-foot deep excavation. The employee was directed to check the elevation of the pipe and was doing so when the south side of the excavation caved in burying the employee.

Violations Noted: Excavation Trenching and Shoring
General Rules

32. A crew was laying roof deck and insulation. The crew had laid 3 sheets of decking out beyond the leading edge to be used as a work platform to assist in rolling out the insulation. On the day of the accident the winds were extremely high. The employee was going to step across from the platform to the deck to assist with stretching and securing the insulation. As the employee was stepping across he fell 27 feet to the pavement below.

Violations Noted: Fall Protection
General Rules

33. Employee was in a make shift workbasket, which was not secured to the forks of a fork truck, The workbasket and the employee, fell approximately 24 feet.

Violations Noted: Mobile Equipment
Scaffolds
Concrete Construction
General Rules

Manufacturing

1 - 6. Industrial boiler explosion resulting in 6 deaths.

Violations Noted: Electrical Power Generation, Transmission and Distribution
General Duty
National Electrical Code
Conveyors
Hazard Communication

Manufacturing (continued)

7. Employee climbed into a vacuum forming machine to remove a machine component, The machine cycled, pinning him between the machine support and an oven shield.

Violations Noted: Lockout/Tagout
General Provisions
National Electrical Code

8. Employee was removing shipping boards from the bottom of a 1334 pound storage cabinet that was raised on the forks of a powered industrial truck. The unsecured cabinet fell from the forks onto the employee.

Violations Noted: Powered Industrial Trucks

9 - 13. Employees were working in a process building apparently assembling fireworks when an explosion/fire occurred resulting in five deaths.

Violations Noted: Personal Protective Equipment
General Duty
Lockout/Tagout
Explosives and Blasting Agents
Hazard Communication
Storage and Handling of Liquefied Petroleum Gases
Process Safety Management of Highly Hazardous Chemicals
Recording and Reporting of Occupational Injuries and Illnesses

14. Employee was machining a steel shaft in a lathe. He was working alone and was found with his jacket entangled on the steel shaft being machined resulting in multiple trauma to the chest and head.

Violations Noted: Metalworking Machinery
General Provisions
National Electrical Code

15. Employee started up a forging press and the electric motor cage and housing exploded sending shrapnel flying striking the employee in the head and shoulders.

Violations Noted: Forging
National Electrical Code

Manufacturing (continued)

16. Employee was adjusting a cardboard chute under a plastic injection-molding machine. He went under the guard and was between the mold and the stationary platen while the mold was closed. When the mold opened his head was crushed between the mold and the platen.

Violations Noted: Lockout/Tagout
Hazard Communication

17. Employee was doing preventative maintenance on a forklift. He jacked up the forklift, crawled under it and the jack slipped out causing the forklift to fall on his head.

Violations Noted: Powered Industrial Trucks
General Provisions

18. Employee was unloading a stake truck and fell from the truck hitting his head on the ground.

Violations Noted: Statutory Rules - Failure to Report Fatality

19. The employee was a glass and mirror warehouse worker. He was assisting a co-worker retrieve a vertical piece of mirror located in the middle of the stack. The employee pulled the stack of glass towards him but could not hold it because it was too heavy. The stack knocked him over and the mirrors landed on his chest suffocating him.

Violations Noted: Statutory Rules - Failure to Report Fatality
General Provisions
Inspections and Investigations, Citations and Proposed Penalties

20. Employee was operating a radio-controlled crane moving a ladle of molten metal. The ladle of metal exploded burning 90% of the employee's body with 2nd and 3rd degree burns. A control valve for the cold water supply had been left in the closed position, which failed to cool a die, which allowed water to come in contact with the molten metal causing the explosion.

Violations Noted: Foundries
General Duty
General Provisions

Manufacturing (continued)

21. The employee an electrician was found lying under the billet loaders of an aluminum extruder press. At the time of the incident the employee was cleaning flakes from under the loader billet. The extruder has 2 billet loading arms that pivot down to a loading position where heated billets roll into a "U" cradle shape, The loader arms are powered by 3500 lbs. Of hydraulic pressure, There are 2 micro switches located below the loader arm when it pivoted down. When the arm is down there is about a 4-6 inch clearance between the arm and the machine frame. The padlock and lockout tag was found laying on top of an electrical panel about 10 feet from where the employee had been caught under the loader arm.

Violations Noted: Lockout/Tagout

22. Employee was starting a new spool of wire on a wire draw machine. During this process he was caught between the moving wire and the drive wheel and pulled between the wheel and the live block.

Violations Noted: General Duty

23. Employee was assisting in moving rail cars using a chain attached to a front-end loader. The cars got away from them and passed the loader. The employee was between the cars and the chain and was pinned by the chain against the car.

Violations Noted: General Duty
General Provisions

24. Employee was operating the head saw when a log rolled from the log deck behind him. The log pushed the employee onto the carriage control and in front of the carriage. The carriage pushed the employee into the head saw.

Violations Noted: Sawmills
Statutory Rules - Failure to Report Fatality

25. Employee was working from a 6-foot ladder and fell hitting his head on the floor.

Violations Noted: None

Transportation and Public Utilities

1. Employee was delivering a load of sodium hydrosulfide. The employee pumped some of the sodium hydrosulfide into four ferrous sulfate storage tanks. A reaction between the sodium hydrosulfide and the acidic ferrous sulfate occurred resulting in the generation and release of hydrogen sulfide gas into the workplace. The employee subsequently died as a result of being exposed to hydrogen sulfide gas.

Violations Noted: Hazard Communication
Air Contaminant
Floor and Wall Openings, Stairways and Skylights
Eye Wash
Respiratory Protection
Hazardous Waste Operations and Emergency Response

2 - 3. Two employees were repairing a rail car. They had jacked and blocked the car up but the footing was not proper. This caused the jack to tip and the rail car to fall on them.

Violations Noted: Hand and Portable Power Tools
General Duty

4. Employee was loading cars onto a car-hauling trailer. While making adjustments under the ramp the employee inadvertently hit the unguarded lever causing the ramp to come downward crushed him between the ramp and bed of the trailer.

Violations Noted: General Duty
General Provisions

5. Employee was re-energizing a control panel and replacing fuses. The fuse drawer was not locked properly and when the employee pushed the fuse into position the fuse drawer was pushed in and it made contact with the live bus in the back of the cabinet drawer.

Violations Noted: Electrical Power Generation, Transmission and Distribution

6. Employee was a sorter and forklift driver. He was untrained and unlicensed to drive a fork truck. When he went to empty a tipper hopper while driving a fork truck he leaned through the carriage hit the controls and the mast moved crushing his head between the mast and the carriage.

Violations Noted: Powered Industrial Trucks

Transportation and Public Utilities (continued)

7. Employee appeared to be reaching inside the side hopper hatch opening when the driver activated the lift mechanism and crushed the employee against the side of the truck.

Violations Noted: Refuse Packer Units
Lockout/Tagout
General Duty

8. Employee was assigned to clean around coal belt tripper cars. A second employee activated car movement catching the first employee between the moving car and the adjacent car, crushing the employee.

Violations Noted: Floor and Wall Openings, Stairways and Skylights
General Duty
Conveyors
National Electrical Code
Electrical Power Generation, Transmission and Distribution

9. Employee was walking a horse down the street. Something startled the horse and the horse reared up. The employee apparently tripped and the horse struck the employee's head with its hoof.

Violations Noted: Statutory Rules - Failure to Report Fatality

10. Employee was assigned to clean a breaker panel and accidentally contacted the exposed live parts. The employee did not lockout the power and was not trained in the hazards of doing the job.

Violations Noted: Electrical Power Generation, Transmission and Distribution
Portable Ladders

Wholesale Trade

1. Employee was pinned between an open door of a delivery van and the wall of the garage. The employee left the vehicle without having the van in park and either fell or stepped between the van door and wall of the garage.

Violations Noted: Statutory Rules - Failure to Report Fatality

Wholesale Trade (continued)

2. Employee was a warehouse worker moving a bundle of lumber with a powered industrial truck. When the employee attempted to back up, his forks caught the bundle in front of the bundle he was moving. The caught bundle of wood tipped onto the front of the overhead guard, breaking the guard and the employee's neck.

Violations Noted: Powered Industrial Trucks
General Provisions

3. A coil of steel that fell over crushed employee.

Violations Noted: Slings
General Duty
General Provisions

4. Employee was driving a powered industrial truck and backed off of a receiving dock platform causing the powered industrial truck to fall on him.

Violations Noted: Powered Industrial Trucks
Statutory Rules - Failure to Report Fatality

5. Employee was setting up a steel coil slitter using an overhead crane to move a 7000-pound steel coil into place. The employee used a steel alloy chain sling that was rated for only 3500 pounds, the sling broke and the coil fell on the employee.

Violations Noted: Slings
General Duty
General Provisions

Retail Trade

1. Employee was changing the hot oil from a deep fryer through a filtering system. The employee apparently had an epileptic seizure causing him to lose control and fall into the hot grease causing severe burns.

Violations Noted: Personal Protective Equipment
Hazard Communication
General Provisions
Electrical Safety Related Work
Statutory Rules - Failure to Report Fatality

Retail Trade (continued)

2. Employees loaded scrap tires into a pickup till they could no longer close the tailgate. The employees then sat on the tailgate with their legs dangling off the truck bed. While the truck was going from the garage area to the tire storage area one of the employees fell off the truck hitting his head on the driveway.

Violations Noted: General Duty

3. The employee was retrieving food from a freezer while leaning against a coffeemaker when a fault occurred causing the employee to be electrocuted.

Violations Noted: Electrical Safety Related Work
National Electrical Code

Services

1. Employee was assigned to lubricate a bearing on an amusement ride. To access this location the employee had to climb an interim ladder about 30 feet up. The employee accidentally contacted an open electrical buss near the bearing, with the grease gun. The employee received a shock and fell.

Violations Noted: Lockout/Tagout
Statutory Rules - Failure to Report Fatality
Inspections and Investigations, Citations and Proposed Penalties

2. Employee was helping an employee try to seat a split rim tire. The employee was not trained in changing split rims and the employee struck the tire with a hammer to help set it. The tire was lying on the floor and part of the split rim flew off striking the employee in the head.

Violations Noted: Automotive Service Operations
Personal Protective Equipment
Statutory Rules - Failure to Report Fatality
Inspections and Investigations, Citations and Proposed Penalties

3. The employee had completed a carpet-cleaning job and was driving home when his van broke down. The employee apparently started up the gasoline-powered carpet-cleaning machine in the back of the van to stay warm while he waited. He was discovered dead in the van due to overexposure to carbon monoxide.

Violations Noted: Air Contaminants
Hazard Communication
Statutory Rules - Failure to Report Fatality

Services (continued)

4 - 5. Two employees were asphyxiated when they climbed into a silo that was not ventilated before entry.

Violations Noted: Permit Required - Confined Spaces

6. Employee was cleaning eaves troughs of a home and was standing on the roof. When the employee finished he fell trying to get back on the ladder to the ground.

Violations Noted: Portable Ladders
General Duty
Statutory Rules - Failure to Report Fatality

7 - 8. There was an explosion in a boiler room and the blast fatally injured two employees.

Violations Noted: Statutory Rules - Failure to Report Fatality

Public Administration

1. Employee was operating a tractor with a bucket to gain access up and down a ski slope. Evidence indicates that the tractor rolled over on an incline throwing the deceased from the cab of the tractor, which rolled over him.

Violations Noted: Tractors